

## INTERLINING OF GARMENT

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**Applicant:** BLUE LOCK KK

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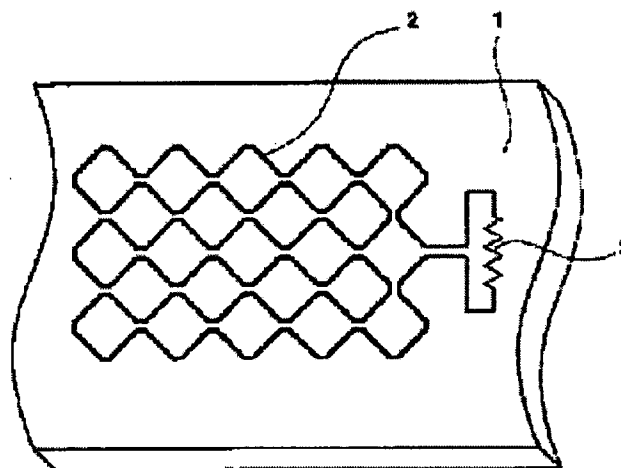
**Application number:** JP19970067208 19970212

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### Abstract of JP10226908

**PROBLEM TO BE SOLVED:** To obtain a garment interlining capable of absorbing and attenuating electromagnetic waves or magnetic waves by the action of an electric circuit and thereby capable of protecting the wearer of the garment from the affections of the electromagnetic waves or magnetic waves by flatly disposing the electric circuit having the coil of an oscillation circuit or electromagnetic induction circuit. **SOLUTION:** This interlining of a garment is obtained by flatly disposing an electric circuit (e.g. a circuit having a flat coil 2 and a resistor 3 electrically connected to the coil in series) having a coil of an oscillation circuit (capable of being oscillated with electromagnetic waves having a specific frequency determined by the relation of the coil with a capacitor) or electromagnetic induction circuit (capable of taking a magnetic wave energy in a varied magnetic field into the coil as an induction electric current) in the interlining 1 (comprising a nonwoven fabric, a thick woven fabric, a synthetic resin foamed product, etc., and usually disposed between a front side fabric and a lining fabric to give effects such as shape retainability and heat insulation to a garment) of the garment.



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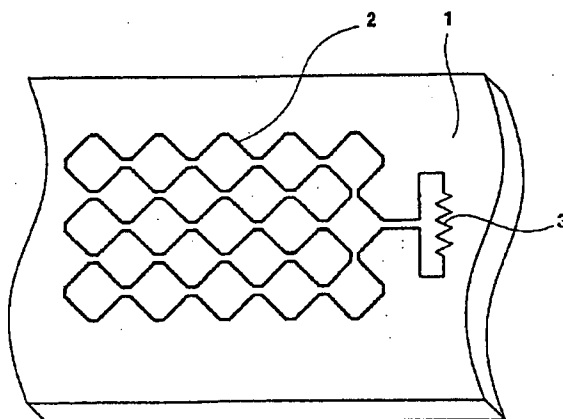
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(54) 【発明の名称】 衣服の芯地

(57) 【要約】

【目的】 空中に放射されている電磁波や磁波のエネルギーを減少して、衣服を着ている人に対する電磁波の暴露量を減らす。

【構成】 衣服を構成する衣服の芯地に発振回路や電磁誘導回路のコイルを有する電気回路を平面的に配置して、空中に放射されている電磁波や磁波のエネルギーを電気回路内に取り込み吸収する。



【特許請求の範囲】

【請求項1】 発振回路や電磁誘導回路のコイルを有する電気回路を平面的に配置した衣服の芯地

【請求項2】 電気回路のコイルが重複部を有しない平面コイルである請求項1記載の衣服の芯地

【請求項3】 電気回路の身体側の内側に導電層よりなる電磁シールドを設けた請求項1記載の衣服の芯地

【請求項4】 周波数特性の異なる複数の電気回路を設けた請求項1記載の衣服の芯地

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は衣服の芯地に関する。さらに詳しくは芯地にコイルを有する電気回路を平面的に配置して電磁波や磁場に対する防御機能を持たせたものである。

【0002】

【従来の技術】繊維製品である衣服や前掛けに電磁波の防御機能を持たせたものは、導電性の生地や導電性糸がある間隔で織り込んだ生地を衣服の部位に使用するか、導電性の素材を衣服に取り付けて、その導電性素材で覆われた人体の部位を電磁シールドして電磁波から守るものである。

【0003】電磁波を吸収又は変調して電磁波防御する特定のセラミックや電気回路も知られており、人体に対する有害電磁波の暴露量を減らして電磁波から人体を守ろうとするものである。

【0004】

【発明が解決しようとする課題】衣服はその性質上、上衣であれズボンであれ体の全てを覆うわけではなく、手足や頭や顔は露出することが多く、導電性の生地や素材を衣服の一部に用いても、導電性素材で覆われた部分のみしかシールドできず、特定部位に対する特定方向からの電磁波防御しかできない。

【0005】特定のセラミックや電気回路で人体の電磁波防御をしようとしても、それらの装置やセラミックのすぐ近くに位置するか、それらを常時携帯して持ち歩く必要がある。

【0006】電場と磁場の周期的変化が波動となって伝わるのが電磁波で、電波として意図的に電磁波を放射しているところだけでなく、電気の流れているところでは電磁波が発生し、さらに数Kヘルツ以下の極低周波の電磁波は、磁場としての性質が強く磁波と考えることができる。

【0007】電磁波が人体に対して悪い影響を及ぼすものは、電磁波が体内に入ると分子を振動させて熱を発生させる発熱効果と、体内の細胞分子間で電子の移動が起きて生体電気反応が乱される非熱効果とが考えられ、さらに変化する磁場中の導電体に電流の生じる電磁誘導現象があり、磁波の磁場により導電体である人体にも電流が流れることになり何らかの悪影響を及ぼしていること

が考えられる。

【0008】

【課題を解決するための手段】衣服の構成要素である芯地に電気回路を配置して、該電気回路の作用により電磁波や磁波を吸収減衰し衣服を身につけている人を電磁波や磁場の悪影響から保護する。

【0009】電磁波中ではコイルとコンデンサよりなる電気回路は共振して電気発振することが発振回路としてよく知られており、また変化する磁場中のコイルに誘導電流が流れることも電磁誘導回路としてよく知られている。

【0010】これらの回路では、電磁波あるいは磁波のエネルギーを回路中に取り込み、他のエネルギーに変換していることになり、変換したエネルギーを人体に無害な形で消費すれば、その分だけ電磁波や磁波が弱まることになり、電磁波や磁波からの人体に対する悪影響を減少できる。

【0011】すなわち、本発明では発振回路や電磁誘導回路のコイルを有する電気回路を衣服の芯地に平面的に配置して設け、これらの回路により電磁波や磁波のエネルギーをコイルにより回路内に取り込み、振動や熱として消費して人体に注がれる電磁波や磁波のエネルギーを減衰させるものである。

【0012】衣服の芯地は不織布や厚めの織り地あるいは合成樹脂発泡体等よりなり、通常は表生地と裏地の間に位置して保形あるいは保温等の効果を衣服に与えるものであり、さらに表生地とその裏に取り付けた芯地のみで衣服の部分を構成し裏地を使用しない場合もあるが、衣服の芯地は表地より厚みもあり剛性も高くさらに表面から見えないので平面的な電気回路を一体的に設けることは容易である。

【0013】発振回路ではコイルとコンデンサの関係で決まる特定の周波数の電磁波で共振し、コイルより取り込まれた電磁波エネルギーは電気振動となり、機械的振動や熱としてエネルギーはかなり消費するが、セラミック発振体等を用い積極的に機械的振動を起こしてエネルギー消費を促してもよい。

【0014】電磁誘導回路では変化する磁場中の磁波エネルギーを誘導電流としてコイルで取り込むので、コイルと直列に電流を消費する抵抗を回路中に設ければ熱としてエネルギーを消費する。

【0015】電気回路は平面的に芯地に配置して芯地と一体としたものであるが、印刷回路等通常の方法による平面回路を芯地に取り付けてもよいが、導電糸や金属繊維を芯地に縫い込んだり張り合わせて回路を構成してもよく、その場合に一定の容量や値を要求されるコンデンサや抵抗等は通常の電気部品を用いればよい。

【0016】電気回路に必要とされるコイルは非伝導性の芯地に導電線を巻き込んで構成したり、別体のコアに巻き込んだ小径のコイルを芯地に埋め込んだり、あるいは

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は印刷回路よりなる平面コイルを芯地に貼り付けて用いてもよいが、重複部を有しない平面コイルとすれば、芯地表面に単層メッキしたり貼り付けることができ、さらに芯地に導電性繊維糸を縫いつけて構成することもできる。

【0017】衣服の芯地に発振回路を配置した場合、電磁波で同調励磁された場合に機械的振動や熱として消費するだけでなく、特定周波数の電磁波を放射するので衣服の芯地内側の身体側に導電性層をもうけて電気回路を電磁シールドするのがよく、その場合の導電性層としては金属繊維を分散させた不織布や導電繊維を織り込んだ生地等を用いればよい。

【0018】発振回路も電磁誘導回路も周波数特性があり、特に発振回路の場合には特定の狭い周波数幅でしか発振しないので全ての電磁波の電磁波エネルギーを減衰するわけでないので周波数特性の違う複数の電気回路を衣服の芯地に配置するのがよく、その場合に選択する周波数としては電力系統の周波数である50または60ヘルツ、携帯電話システムで用いられる800メガヘルツ等、通常の市街地で多く放射されている周波数を選べばよい。

【0019】

【作用】発振回路や電磁誘導回路のコイルを有する電気回路を平面的に配置した衣服の芯地であるので、空中に放射されている電磁波や磁波のエネルギーを電気回路内に取り込んで減衰することができ、その分だけ衣服を着ている人の暴露電磁波を減少することができる。

【0020】コイルを有する電気回路であっても平面的に構成でき、芯地に用いているので外から見えることもなく、芯地自体が剛性を必要とされるものであるので柔軟性を損なう電気回路を一体的に配置しても衣服の芯地としての機能を損なうことはない。

【0021】

【実施例】図1は本発明の実施例による衣服の芯地の一部を切り欠いた斜視図で、不織布等で構成される衣服の芯地1の表面に、平面コイル2とコイルと直列に電気接続した抵抗3よりなる電磁誘導回路を平面的に配置したものである。

【0022】コイルは他の構成でもよく、さらに平面コイルとしては図で示すものだけでなくアレイ形や渦巻き形等でもよく、重複部を有しない平面コイルを用いれば電気回路を平面的に構成しやすく、導電繊維糸でコイルを構成し、抵抗部も導電繊維糸の電気抵抗を利用すれば電磁誘導回路全てを導電繊維糸で構成することが可能となり、通常の縫製工程のみで電気回路を製造することが

できる。

【0023】図2は本発明の別の実施例による衣服の芯地の一部を切り欠いた斜視図で、不織布等で構成される衣服の芯地1の表面に、回路図で示すコイルとコンデンサよりなる周波数特性の異なる2つの発振回路4、5を平面的に配置し、さらに衣服の芯地内側の身体側に導電性層6を設けて電気回路部を電磁シールドしたものである。

【0024】発振回路は印刷回路など別体で構成されたものを芯地に貼り付けたり、平面コイルと電気部品であるコンデンサを接続して構成することができ、周波数特性の異なる複数の発振回路を配置すれば効果が大きく、図では2つ発振回路を配置したものを示したが3つ以上であってもよい。

【0025】衣服の芯地に発振回路や電磁誘導回路を平面的に配置するのであるが、芯地自体が厚みと剛性が必要とされるものであるので、コイルを有する電気回路であっても簡単に配置でき多少柔軟性に欠ける電気回路でも、厚みのある電気部品であっても衣服の芯地内に収容し平面的に設けることができる。

【0026】衣服の芯地内側の身体側に導電性層を設けて電気回路部を電磁シールドする場合は発振回路や電磁誘導回路部のみを電磁シールドすればよく、導電性層としては各種の導電性繊維層を用いればよいが、小面積であるので金属体の使用も可能である。

【0027】

【発明の効果】本発明によれば、衣服の芯地に発振回路や電磁誘導回路のコイルを有する電気回路を平面的に配置し、空中に放射されている電磁波や磁波のエネルギーを電気回路内に取り込むので、その分だけ電磁波や磁波のエネルギーを減少でき、衣服を着ている人に対する電磁波の暴露量を減らすことができる。

【図面の簡単な説明】

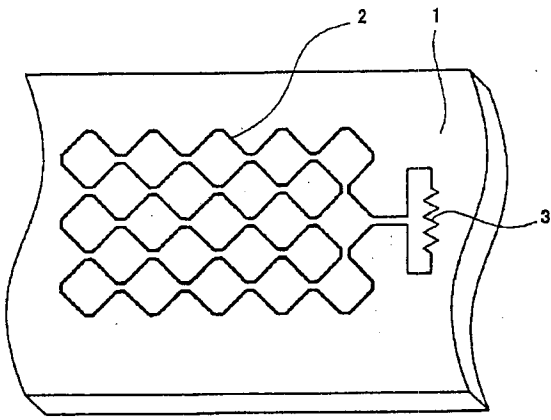
【図1】本発明の実施例による衣服の芯地の一部を切り欠いた斜視図である。

【図2】本発明の別の実施例による衣服の芯地の一部を切り欠いた斜視図である。

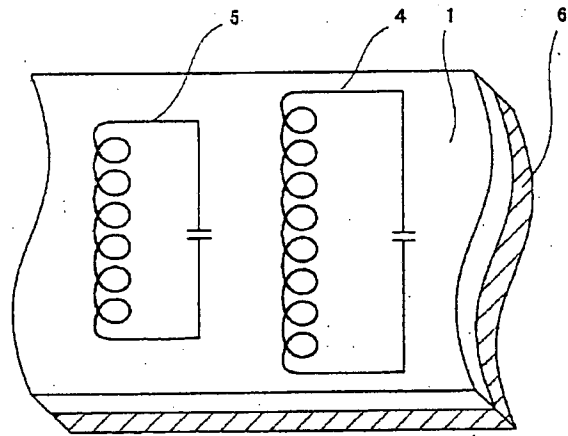
【符号の説明】

- 1、衣服の芯地
- 2、平面コイル
- 3、抵抗
- 4、発振回路
- 5、発振回路
- 6、導電性層

【図1】



【図2】



## PATENT ABSTRACTS OF JAPAN

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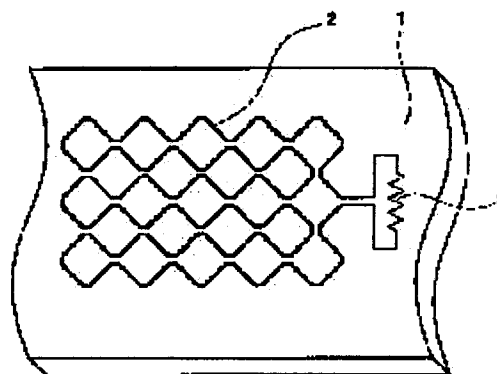
(72)Inventor : WADA TOSHIO

## (54) INTERLINING OF GARMENT

## (57)Abstract:

PROBLEM TO BE SOLVED: To obtain a garment interlining capable of absorbing and attenuating electromagnetic waves or magnetic waves by the action of an electric circuit and thereby capable of protecting the wearer of the garment from the affections of the electromagnetic waves or magnetic waves by flatly disposing the electric circuit having the coil of an oscillation circuit or electromagnetic induction circuit.

SOLUTION: This interlining of a garment is obtained by flatly disposing an electric circuit (e.g. a circuit having a flat coil 2 and a resistor 3 electrically connected to the coil in series) having a coil of an oscillation circuit (capable of being oscillated with electromagnetic waves having a specific frequency determined by the relation of the coil with a capacitor) or electromagnetic induction circuit (capable of taking a magnetic wave energy in a varied magnetic field into the coil as an induction electric current) in the interlining 1 (comprising a nonwoven fabric, a thick woven fabric, a synthetic resin foamed product, etc., and usually disposed between a front side fabric and a lining fabric to give effects such as shape retainability and heat insulation to a garment) of the garment.



## LEGAL STATUS

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[Date of extinction of right]

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CLAIMS

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[Claim(s)]

[Claim 1] The padding cloth of the clothes which have arranged superficially the electrical circuit which has the coil of an oscillator circuit or an electromagnetic-induction circuit [claim 2] The padding cloth of the clothes according to claim 1 whose coil of an electrical circuit is a flat-surface coil which does not have the duplication section [claim 3] The padding cloth of the clothes according to claim 1 which prepared the electromagnetic shielding which becomes the inside by the side of the body of an electrical circuit from a conductive layer [claim 4] The padding cloth of the clothes according to claim 1 which prepared two or more electrical circuits where frequency characteristics differ

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the padding cloth of clothes. In more detail, the electrical circuit which has a coil is superficially arranged to a padding cloth, and the defense function to an electromagnetic wave or a magnetic field is given to it.

[0002]

[Description of the Prior Art] What gave the defense function of an electromagnetic wave to the clothes which are textiles, and an apron attaches a conductive material in the part of clothes at clothes, using the conductive ground and the ground which wove in conductive yarn at a certain spacing, carries out electromagnetic shielding of the part of the body covered for the conductive material, and protects it from an electromagnetic wave.

[0003] The specific ceramic and specific electrical circuit which absorb or become irregular and carry out electromagnetic wave defense of the electromagnetic wave are also known, and the amount of exposure of the harmful electromagnetic wave over the body tends to be reduced, and it is going to protect the body from an electromagnetic wave.

[0004]

[Problem(s) to be Solved by the Invention] clothes — the property top and ependyma — be — trousers — be — even if it is not a wrap reason, hand and foot, the head, and a face expose bodily [ all ] in many cases and it uses the conductive ground and a conductive material for some clothes, only the part covered for the conductive material can be shielded, but only electromagnetic wave defense from specification to a specific part can be performed.

[0005] Even if it is going to carry out electromagnetic wave defense of the body in a specific ceramic and a specific electrical circuit, it is located immediately near those equipment and ceramics, or it is necessary to always carry them and to walk around with them.

[0006] Not only in the place to which periodic change of electric field and a magnetic field serves as wave motion, and an electromagnetic wave is transmitted, and it is emitting the electromagnetic wave intentionally as an electric wave but in the place where the electrical and electric equipment is flowing, an electromagnetic wave occurs and the property as a magnetic field can consider strongly the electromagnetic wave of super-low cycle several K Hertz or less to be a magnetic wave further.

[0007] That on which an electromagnetic wave has bad effect to the body. The exoergic effectiveness of vibrating a molecule and generating heat if an electromagnetic wave goes into the inside of the body. The non-thermal effect by which migration of an electron breaks out between cell molecules in the living body, and a bioelectricity reaction is disturbed can be considered. It is possible that the electromagnetic-induction phenomenon which a current produces is in the conductor in the magnetic field which furthermore changes, a current will flow by the magnetic field of a magnetic wave also on the body which is a conductor, and a certain bad influence is done.

[0008]

[Means for Solving the Problem] An electrical circuit is arranged to the padding cloth which is the component of clothes, and those who do absorption attenuation of an electromagnetic wave

[http://www4.ipdl.ncipi.go.jp/cgi-bin/tran\\_web.cgi.ejje](http://www4.ipdl.ncipi.go.jp/cgi-bin/tran_web.cgi.ejje)

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characteristics, and it oscillates only by the specific narrow frequency span in being especially an oscillator circuit and all electromagnetic wave energy of electromagnetic waves is not decreased to the padding cloth of clothes. In that case, what is necessary is just to choose 50 which is the frequency of electric power system as a frequency to choose or 60 Hertz, 800 etc. MHz of frequencies currently emitted in the usual city area used by the cellular-phone system. [ many ]

[0019]

[Function] Since it is the padding cloth of the clothes which have arranged superficially the electrical circuit which has the coil of an oscillator circuit or an electromagnetic-induction circuit, the energy of the electromagnetic wave currently emitted in the air or a magnetic wave can be incorporated and decreased in an electrical circuit, and the exposure electromagnetic wave of those to whom only the part wears clothes can be decreased.

[0020] Without being visible from outside, since it can constitute superficially and uses for the padding cloth, even if it is the electrical circuit which has a coil, since rigidity is needed for the padding cloth itself, even if it arranges in one the electrical circuit which spoils flexibility, the function as a padding cloth of clothes is not spoiled.

[0021]

[Example] Drawing 1 is the perspective view which cut and lacked some padding cloths of the clothes by the example of this invention, and arranges superficially the electromagnetic-induction circuit which becomes the flat-surface coil 2, a coil, and a serial from the resistance 3 which carried out electrical connection on the front face of the padding cloth 1 of the clothes which consist of nonwoven fabrics etc.

[0022] Other configurations are sufficient as a coil and not only a thing but an array form, spiral shape, etc. which are further shown as a flat-surface coil by a diagram are sufficient. If the flat-surface coil which does not have the duplication section is used, it is easy to constitute an electrical circuit superficially. If a coil is constituted from electric conduction fiber yarn and the resistance section also uses the electric resistance of electric conduction fiber yarn, it becomes possible to constitute all electromagnetic-induction circuits from electric conduction fiber yarn, and an electrical circuit can be manufactured only at the usual sewing process.

[0023] It is the perspective view which cut and lacked some padding cloths of the clothes by another example of this invention, and on the front face of the padding cloth 1 of the clothes which consist of nonwoven fabrics etc., drawing 2 arranges superficially two oscillator circuits 4 and 5 where the frequency characteristics which consist of a coil shown with a circuit diagram and a capacitor differ, further, it forms the conductive layer 6 and carries out electromagnetic shielding of the electrical circuit section to the body side inside [ padding cloth ] clothes.

[0024] As long as it arranges two or more oscillator circuits where what consisted of another objects, such as a printed circuit, can be stuck on a padding cloth, or the capacitor which are a flat-surface coil and an electrical part can be connected and constituted, and frequency characteristics differ, its effectiveness may be large, and although the oscillator circuit showed what has arranged 2 oscillator circuits by a diagram, it may be three or more.

[0025] Although an oscillator circuit and an electromagnetic-induction circuit are superficially arranged to the padding cloth of clothes, even if the padding cloth itself is the electrical part which is thick also in the electrical circuit which can arrange easily and lacks in flexibility somewhat even if it is the electrical circuit which has a coil since thickness and rigidity are needed, it can hold in the padding cloth of clothes, and it can prepare superficially.

[0026] Although what is necessary is just to use various kinds of conductive fiber layers as a conductive layer, since it is small area, use of a metal body is [ that what is necessary is just to carry out electromagnetic shielding only of an oscillator circuit or the electromagnetic-induction circuit section ] also possible, when preparing a conductive layer and carrying out electromagnetic shielding of the electrical circuit section to the body side inside [ padding cloth ] clothes.

[0027]

[Effect of the Invention] Since the energy of the electromagnetic wave which approaches

or the magnetic wave according to an operation of this electrical circuit, and put on clothes are protected from the bad influence of an electromagnetic wave or a magnetic field.

[0009] In the electromagnetic wave, it is also well known as an electromagnetic-induction circuit that the induced current will flow in the coil in the magnetic field which the electrical circuit which consists of a coil and a capacitor resonating, and carrying out an electric oscillation is well known as an oscillator circuit, and changes.

[0010] In these circuits, if the energy which would incorporate the energy of an electromagnetic wave or a magnetic wave all over the circuit, will have transformed into other energy, and was changed is consumed in a form harmless to the body, an electromagnetic wave and a magnetic wave will become weaker and only the part can decrease the bad influence to the body from an electromagnetic wave or a magnetic wave.

[0011] That is, in this invention, the electrical circuit which has the coil of an oscillator circuit or an electromagnetic-induction circuit is superficially arranged to the padding cloth of clothes, and is established in it, and the energy of the electromagnetic wave with which incorporates the energy of an electromagnetic wave or a magnetic wave in a circuit with a coil, consumes it as vibration or heat, and the body is filled, or a magnetic wave is attenuated by these circuits.

[0012] the padding cloth of clothes — a nonwoven fabric and thicker textile — the ground or synthetic-resin foam — becoming — usually — front — what is located between the ground and lining cloth and gives effectiveness, such as shape retention or incubation, to clothes — it is — further — front, although the part of clothes may be constituted only from the ground and a padding cloth attached in the flesh side and lining cloth may not be used. Since the padding cloth of clothes is thick and rigidity does not look highly from a front face further from frontal land, either, it is easy to prepare a superficial electrical circuit in one.

[0013] Although it resonates by the electromagnetic wave of the specific frequency decided by relation between a coil and a capacitor, the electromagnetic wave energy incorporated from the coil serves as electric oscillation and energy is considerably consumed as mechanical oscillation or heat in an oscillator circuit, mechanical oscillation is positively caused using a ceramic oscillation object etc., and energy expenditure may be urged.

[0014] Since it incorporates with a coil by making into the induced current magnetic wave energy in the magnetic field which changes in an electromagnetic-induction circuit, if the resistance which consumes a current to a coil and a serial is prepared all over a circuit, energy will be consumed as heat.

[0015] Although an electrical circuit is superficially arranged to a padding cloth, and are considered as a padding cloth and one, and flat-surface circuits by the usual approach, such as a printed circuit, may be attached in a padding cloth, electric conduction yarn metallurgy group fiber may be sewn in to a padding cloth, or it may be made to rival, a circuit may be constituted, and a capacitor, resistance, etc. of which a fixed capacity and a fixed value are required in that case should just use the usual electrical part.

[0016] Although it may involve in and constitute an electric-conduction line at the padding cloth of non-conductivity or may stick and use for a padding cloth the flat-surface coil which consists of embedding the coil of the minor diameter which involved in the core of another object at a padding cloth \*\*\*\*, or a printed circuit, monolayer plating of the coil needed for an electrical circuit can be carried out, or it can stick on the flat-surface coil which does not have the duplication section, then a padding cloth front face, and conductive fiber yarn sews to a padding cloth, and it can also constitute it in it further.

[0017] What is necessary is it not only to consume as mechanical oscillation or heat, but to be good to prepare a conductive layer and to carry out electromagnetic shielding of the electrical circuit to the body side inside [ padding cloth ] clothes, and to use the ground which wove in the nonwoven fabric which distributed the metal fiber as a conductive layer in that case, and electric conduction fiber, since the electromagnetic wave of a specific frequency is emitted when the oscillator circuit has been arranged to the padding cloth of clothes and alignment excitation is carried out by the electromagnetic wave.

[0018] Are good to arrange two or more electrical circuits where frequency characteristics are different since an oscillator-circuit and electromagnetic-induction circuit also has frequency

[http://www4.ipdl.ncipi.go.jp/cgi-bin/tran\\_web.cgi.ejje](http://www4.ipdl.ncipi.go.jp/cgi-bin/tran_web.cgi.ejje)

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electromagnetic-induction circuit in the padding cloth of clothes, and is emitted in the air, or a magnetic wave is incorporated in an electrical circuit according to this invention, only the part can decrease the energy of an electromagnetic wave or a magnetic wave, and can reduce the amount of exposure of the electromagnetic wave to those who wear clothes.

[Translation done.]

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DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] It is the perspective view which cut and lacked some padding cloths of the clothes by the example of this invention.

[Drawing 2] It is the perspective view which cut and lacked some padding cloths of the clothes by another example of this invention.

[Description of Notations]

1, the padding cloth of clothes

2, a flat-surface coil

3 Resistance

4 Oscillator circuit

5 Oscillator circuit

6, a conductive layer

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[Translation done.]

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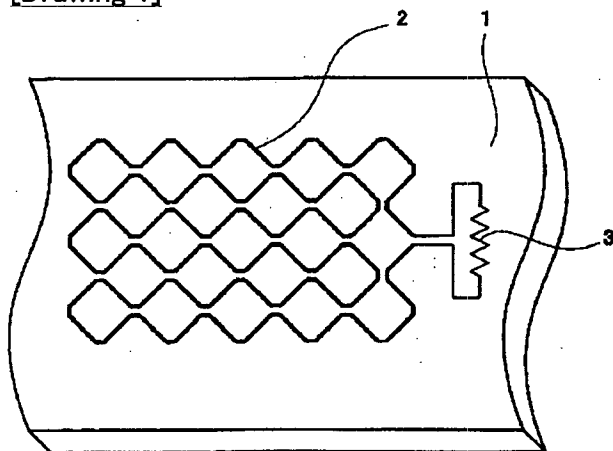
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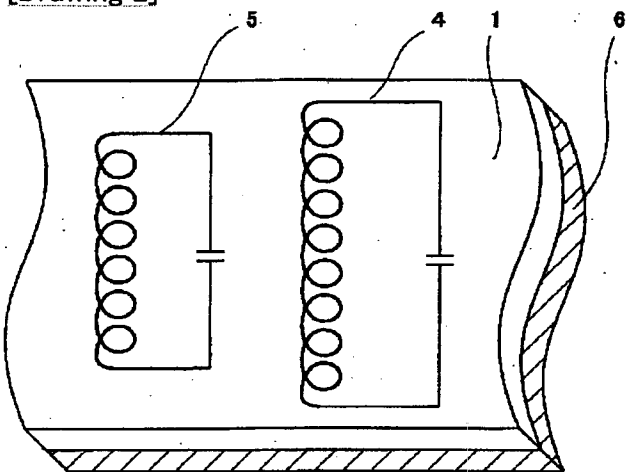
DRAWINGS

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[Drawing 1]



[Drawing 2]



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[Translation done.]